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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/833,348
Filing Date: April 12, 2001
Appellant(s): BROKENSHIRE ET AL.

Patrick C. R. Holmes
For Appellant

REVISED EXAMINER'S ANSWER

This is in response to the order returning undocketed appeal to Examiner filed on 10/26/2006 and the appeal brief filed 09/22/2005 appealing from the Office action mailed 9/24/2003.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6304300	**Warren et al.**	**10-2001**
2001/0055025	**Deering et al.**	**12-2001**

(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims: (see pages 6-16).

(10) Response to Argument

- The broadest independent claim is claim 22 in the current application.
- Appellant on page 3 under subject of "Argument" repeats the Examiner's rejection from office action of 9/24/2003, pages 3-4.
- Appellant on page 4 argues the cited reference, Warren does not teach all claimed limitations. Also argues the Examiner has failed to cite a reference teaching the claim limitation of "wherein the gamma correction is applied only to the primitives defining lines,"
  - Examiner's reply: the main claim limitation that appellant argues is, as follows: "... applied only to the primitives defining lines," in independent claim 1. The broadest independent claim is claim 22 that does not contain the adverb "only", but even so the reference Warren clearly discloses at col. 10 lines 55-59, quote: "The scan conversion unit 904 generates pixel data based on the received primitives by interpolating straight lines so that each intermediate value need not be individually and separately calculated by the geometry subsystem". The specification on page 2 lines 6-9 discloses that (a primitive is a graphics element that is used as a building block for creating images, such as, for example, a point, a line, a polygon, or text. A primitive is defined by a group of one or more vertices). The reference Warrant at col. 10 lines 52-54 teaches similar definition for the primitives, as follows: The resulting primitives (points, lines, polygons,

polyhedral, and the like) supplied by the geometry unit 902 are then provided to the scan conversion unit 904.

- Appellant on pages 5-6 argues similar to the previous argument.
- Appellant on page 7 regarding the rejection of claims 8, 11, and 12 argues that these claims are enabled by the specification.
  - Examiner's reply: Claims 8, 11, 12 rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure, which is not enabling. Appellant in claim 8 claims "the bus system includes a primary bus and a secondary bus". In light of the specification on page 8 line 4 discloses "local bus architecture", that is not the bus system that includes a primary bus and a secondary bus. On page 8 line 8 discloses "PCI bus", that is not the bus system that includes a primary bus and a secondary bus. On page 8 line 8 discloses "PCI bus", that is not the bus system that includes a primary bus and a secondary bus. On page 8 line 15 discloses "host bus adapter", that is not the bus system that includes a primary bus and a secondary bus. On page 8 line 20 discloses "Expansion bus interface", repeatedly, that is not the bus system that includes a primary bus and a secondary bus. For the above reasons, claim 8 is not enabled by the specification; it is believed that the rejections should be sustained. Regarding the rejection of claim 11, that claims "wherein the communications unit is an Ethernet adapter". The terms "Ethernet adapter" are not contained as a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, to make and

use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention. Regarding claim 12, that claims "the processor and memory that are located in graphic adapter". Again the terms in the claim are not enabled by the specification. That is why Examiner on page 2 of Office action dated 9/24/2003 raised three questions, which are still unclear. The questions are repeated here:

1. The advantages of primary bus and a secondary bus over prior art?
2. What are the advantages having (NIC, i.e. Network Interface Card), while the claim 7, discloses "a data processing system"?
3. What are the characteristics of processor unit and memory that is located in a graphics adapter?

- Appellant on page 7 regarding the limitation in claim 8 refers to page 8, lines 5-26 which describes multiple busses, including an expansion bus and a PCI local bus.
  - Examiner's reply: as Appellant at the bottom of page 7 admits by using the term "wit", that means "a person of exceptional intelligence" may understand the similarity between "multiple busses, including an expansion bus and a PCI local bus" and "the bus system that includes a primary bus and a secondary bus".
- Appellant on page 7 regarding the limitation in claim 11 does not provide substantial explanation.
- Appellant on pages 7-8 regarding the limitation in claim 12 does not provide substantial explanation. The Examiner looks for the significant of these limitations over the prior arts.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 8, 11, 12 rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Antialiasing and gamma correction are critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Appellant on page 7 regarding the rejection of claims 8, 11, and 12 argues that these claims are enabled by the specification.

Appellant in claim 8 claims "the bus system includes a primary bus and a secondary bus". In light of the specification on page 8 line 4 discloses "local bus architecture", that is not the bus system that includes a primary bus and a secondary bus. On page 8 line 8 discloses "PCI bus", that is not the bus system that includes a primary bus and a secondary bus. On page 8 line 8 discloses "PCI bus", that is not the bus system that includes a primary bus and a secondary bus. On page 8 line 15 discloses "host bus adapter", that is not the bus system that includes a primary bus and a secondary bus. On page 8 line 20 discloses "Expansion bus interface", repeatedly, that is not the bus system that includes a primary bus and a secondary bus. For the above reasons, claim 8 is not enabled by the specification; it is believed that the rejections should be sustained. Regarding the rejection of claim 11, that claims "wherein the communications unit is an Ethernet adapter". The terms "Ethernet adapter" are not contained as a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and

exact terms as to enable any person skilled in the art to which it pertains, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention. Regarding claim 12, that claims "the processor and memory that are located in graphic adapter".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, 13-18,19-20, 22 and 23 rejected under 35 U.S.C. 102(e) as being anticipated by Warren et al. US Patent 6304300, hereinafter, Warren.

1. Claim1.

"A method in a data processing system for antialiasing lines for display, the method comprising: receiving graphics data for display, wherein the graphics data includes primitives defining lines; applying a gamma correction to the graphics data on a per primitive basis to form the antialiased lines, wherein the gamma correction is applied only to the primitives defining lines; and displaying the antialiased lines", Examiner's reply: the main claim limitation that appellant argues is, as follows: "... applied only to the primitives defining lines," in independent claim 1. The broadest independent claim is claim 22 that does not contain the adverb "only", but even so the reference Warren clearly discloses at col. 10 lines 55-59, quote: "The scan

conversion unit 904 generates pixel data based on the received primitives by interpolating straight lines so that each intermediate value need not be individually and separately calculated by the geometry subsystem". The specification on page 2 lines 6-9 discloses that (a primitive is a graphics element that is used as a building block for creating images, such as, for example, a point, a line, a polygon, or text. A primitive is defined by a group of one or more vertices). The reference Warrant at col. 10 lines 52-54 teaches similar definition for the primitives, as follows: The resulting primitives (points, lines, polygons, polyhedral, and the like) supplied by the geometry unit 902 are then provided to the scan conversion unit 904. The method includes partitioning the gamma correction curve table into N segments such that each of the N segments is associated with a set of intensity levels from the specified total number of intensity levels. Also see (col. 9, lines 44-65) The geometry unit 902 converts the graphical data from the processor 804 into a screen coordinate system and performs projection and transformation processes to give depth to a displayed object. The resulting primitives (points, lines, polygons, polyhedra, and the like) supplied by the geometry unit 902 are then provided to the scan conversion unit 904.

2. Claim 2.

"The method of claim 1, wherein the gamma correction is performed using a gamma correction table", Warren discloses in Fig. 1 B an exemplary gamma correction curve 104 for mapping pixel intensities to input voltages of a display device. In display systems, the gamma correction curve 104 may be implemented as a lookup table, which samples and stores pixel intensities and associated input voltages. The pixel intensities produced are used as indices to select the associated input voltages stored in the lookup table.

3. Claim 3.

"The method of claim 1, wherein the gamma correction is performed using a gamma correction function", Warren illustrates in Fig. 5B a graph 550 of a gamma correction curve 552 for illustrating a generic partitioning scheme in accordance with one embodiment of the present invention. The gamma correction curve 552 plots normalized look-up value (e.g., electron gun voltage, gamma-corrected value, etc.) as a function of intensity levels from 0 to N.sub.SN. The gamma correction curve 552 is partitioned into N segments.

4. Claim 4.

"The method of claim 2, wherein the gamma correction table is specified by an application and loaded into a graphics subsystem processing the graphics data for display within the data processing system", Warren discloses in (col. 3, lines 45-49) gamma correction is performed on the set of pixel data by accessing a stored pixel value in one of the N segments, in response to the pixel data, to generate gamma corrected pixel data.

5. Claim 5.

"The method of claim 3, wherein the gamma correction function is specified by an application and loaded into a graphics subsystem processing the graphics data for display within the data processing system", see rejection of claim 4.

6. Claim 6.

"The method of claim 1, wherein the applying step comprises: adjusting intensity of pixels defining the primitives", as Appellant discloses in the specification page 2, lines 5-10, a primitive is a graphics element that is used as a building block for creating images, such as, a point, a line, a polygon, or text. Warren et al. disclose in abstract that the gamma correction

curve table includes a specified total number of intensity levels associated with gamma corrected pixel values with one intensity level per pixel value. The method includes partitioning the gamma correction curve table into N segments such that each of the N segments is associated with a set of intensity levels from the specified total number of intensity levels.

7. Claim 7.

"A data processing system comprising: a bus system; a communications unit connected to the bus, wherein data is sent and received using the communications unit; a memory connected to the bus system, wherein a set of instructions and data including a gamma correction table are located in the memory; and a processor unit connected to the bus system, wherein the processor unit executes the set of instructions to receive graphics data for display, wherein the graphics data includes primitives defining lines; apply a gamma correction to the graphics data on a per primitive basis to form antialiased lines, wherein the gamma correction is applied only to the primitives defining lines; and display the antialiased lines", Warren et al. illustrate in Fig. 9 the pixel data is then sent to the rasterization unit 906, where Z-buffering, blending, texturing, and antialiasing functions are performed. Also discloses in abstract that the gamma correction curve table includes a specified total number of intensity levels associated with gamma corrected pixel values with one intensity level per pixel value. The method includes partitioning the gamma correction curve table into N segments such that each of the N segments is associated with a set of intensity levels from the specified total number of intensity levels.

8. Claim 13.

"A data processing system for antialiasing lines for display, the data processing system comprising: receiving means for receiving graphics data for display, wherein the graphics data

includes primitives defining lines; applying means for applying a gamma correction to the graphics data on a per primitive basis to form the antialiased lines, wherein the gamma correction is applied only to the primitives defining lines; and displaying means for displaying the antialiased lines", Warren et al. illustrate in Fig. 9 the pixel data is then sent to the rasterization unit 906, where Z-buffering, blending, texturing, and antialiasing functions are performed. Also discloses in abstract that the gamma correction curve table includes a specified total number of intensity levels associated with gamma corrected pixel values with one intensity level per pixel value. The method includes partitioning the gamma correction curve table into N segments such that each of the N segments is associated with a set of intensity levels from the specified total number of intensity levels.

9. Claim 14.

"The data processing system of claim 13, wherein the gamma correction is performed using a gamma correction table", Warren discloses in Fig. 1 B an exemplary gamma correction curve 104 for mapping pixel intensities to input voltages of a display device. In display systems, the gamma correction curve 104 may be implemented as a lookup table, which samples and stores pixel intensities and associated input voltages. The pixel intensities produced are used as indices to select the associated input voltages stored in the lookup table.

10. Claim 15.

"The data processing system of claim 13, wherein the gamma correction is performed using a gamma correction function", Warren illustrates in Fig. 5B a graph 550 of a gamma correction curve 552 for illustrating a generic partitioning scheme in accordance with one embodiment of the present invention. The gamma correction curve 552 plots normalized look-up value (e.g.,

electron gun voltage, gamma-corrected value, etc.) as a function of intensity levels from 0 to N.sub.SN. The gamma correction curve 552 is partitioned into N segments.

11. Claim 16.

"The data processing system of claim 14, wherein the gamma correction table is specified by an application and loaded into a graphics subsystem processing the graphics data for display within the data processing system", Deering discloses in paragraph 0014, the sample-to-pixel calculation unit filters samples based on a filter function which may be centered over a current pixel location in the screen space. The filter function has an associated domain of definition referred to herein as the filter support or filter extent.

12. Claim 17.

"The data processing system of claim 15, wherein the gamma correction function is specified by an application and loaded into a graphics subsystem processing the graphics data for display within the data processing system", Warren discloses in (col. 3, lines 45-49) gamma correction is performed on the set of pixel data by accessing a stored pixel value in one of the N segments, in response to the pixel data, to generate gamma corrected pixel data.

13. Claim 18.

"The data processing system of claim 13, wherein the applying means comprises: means for adjusting intensity of pixels defining the primitives", Warren et al. disclose in abstract that The gamma correction curve table includes a specified total number of intensity levels associated with gamma corrected pixel values with one intensity level per pixel value. The method includes partitioning the gamma correction curve table into N segments such that each of the N segments is associated with a set of intensity levels from the specified total number of intensity levels.

14. Claim 19.

"A computer program product in a computer readable medium for antialiasing lines for display, the computer program product comprising: first instructions for receiving graphics data for display, wherein the graphics data includes primitives defining lines; second instructions for applying a gamma correction to the graphics data on a per primitive basis to form the antialiased lines, wherein the gamma correction is applied only to the primitives defining lines; and third instructions for displaying the antialiased lines", Warren et al. illustrate in Fig. 9 the pixel data is then sent to the rasterization unit 906, where Z-buffering, blending, texturing, and antialiasing functions are performed. Also discloses in abstract that the gamma correction curve table includes a specified total number of intensity levels associated with gamma corrected pixel values with one intensity level per pixel value. The method includes partitioning the gamma correction curve table into N segments such that each of the N segments is associated with a set of intensity levels from the specified total number of intensity levels.

15. Claim 20.

"An apparatus comprising: an input, wherein position information for a pixel is received at the input; a coverage interpolation unit connected to the input, wherein the coverage interpolation unit generates a coverage valued at a first output in which the coverage value identifies how much of the pixel is covered at a first output; an alpha interpolation unit connected to the input, wherein the alpha interpolation unit identifies a degree of transparency for the pixel as an opacity value at a second output; a color interpolation unit connected to the input, wherein the color interpolation unit generates a red, green, and blue value for the pixel at a third output; a gamma correction unit connected to the first output, wherein the gamma correction unit generates a

gamma corrected value for the pixel using the coverage value at a fourth output, wherein the gamma correction is applied only to the primitives defining lines; a modulate unit, wherein the modulate unit is connected to the second output and the fourth output, wherein the modulate unit adjusts the gamma corrected value to the opacity value to generate an adjusted gamma corrected value at a fifth output; a frame buffer having a sixth output, wherein the frame buffer holds a final pixel value; and a blend unit connected to the fifth output and the third output, wherein the blend unit blends the adjusted gamma corrected value and the red, green, and blue value for the pixel with a current pixel value from the sixth output of the frame buffer to form the final pixel value for display", Warren et al. illustrate in Fig. 9 the pixel data is then sent to the rasterization unit 906, where Z-buffering, blending, texturing, and antialiasing functions are performed. Also discloses in abstract that the gamma correction curve table includes a specified total number of intensity levels associated with gamma corrected pixel values with one intensity level per pixel value. The method includes partitioning the gamma correction curve table into N segments such that each of the N segments is associated with a set of intensity levels from the specified total number of intensity levels.

16. Claim 22,

"A method in a data processing system for antialiasing lines for display, the method comprising: generating graphics data for display; determining whether the graphics data comprises a line; if the graphics data comprises a line, sending the graphics data to an adapter; applying a gamma correction to the graphics data to form an antialiased line". Warren et al. illustrate in Fig. 9 the pixel data is then sent to the rasterization unit 906, where Z-buffering, blending, texturing, and antialiasing functions are performed. Also discloses in abstract that the gamma correction curve

table includes a specified total number of intensity levels associated with gamma corrected pixel values with one intensity level per pixel value. The method includes partitioning the gamma correction curve table into N segments such that each of the N segments is associated with a set of intensity levels from the specified total number of intensity levels.

17. Claim 23,

"The method of claim 22, wherein gamma correction is applied only to pixel generated for the line by a rasterization engine". Warren et al. in Fig. 9 and in (col. 9, lines 43-65) teach the limitations.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

18. Claims 9, 10, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over warren, and further in view of Deering et al. 2001/0055025, hereinafter, Deering.

19. Claim 9.

"The data processing system of claim 7, wherein the processor unit includes a single processor", the step is obvious because some computer has one processor and some has multi processor.

20. Claim 10.

"The data processing system of claim 7, wherein the processor unit includes a plurality of processors", the step is obvious because some computer has one processor and some has multi processor.

21. Claim 21.

"The apparatus of claim 20, wherein the gamma correction unit is connected to the first output of coverage interpolation unit by a clamp, wherein the clamp prevents values generated by the coverage interpolation unit from going out of a selected range of values", Warren does not teach the gamma correction unit is connected to the first output of coverage interpolation unit by a clamp, however, the step is obvious because Deering discloses in paragraph 0147 that the samples may be offset by a random angle (e.g., from 0.degree. to 360.degree.) and a random distance, or by random x and y offsets, which may or may not be limited to a predetermined range.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Warren into Deering in order to specify a substantial need for a system and method, which could provide for unity gain in the filtering process (i.e. in the process of generating pixel values from sample values) in a manner, which is flexible and efficient.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Javid Amini

Conferees:

Kee Tung

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SUPERVISORY PATENT EXAMINER

Chauhan Ulka